UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/788,148	02/16/2001	Barry Wendt	S30.12-0002	4295

27367   7590   09/28/2005

WESTMAN CHAMPLIN & KELLY, P.A.
SUITE 1400 - INTERNATIONAL CENTRE
900 SECOND AVENUE SOUTH
MINNEAPOLIS, MN 55402-3319

EXAMINER
SETH, MANAV

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

	Application No.	Applicant(s)
	09/788,148	WENDT ET AL.
Office Action Summary	Examiner	Art Unit	
	Manav Seth	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _06 May 2005._

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1,63-68 and 85-87_ is/are pending in the application.

    4a) Of the above claim(s) _69-84_ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1,63-68 and 85-87_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _16 February 2001_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to the Restriction Requirement

1.   The response to the restriction requirement filed on May 06, 2005 has been entered in full.

Examiner as per applicant's election of Group I (claims 1, 63-68 and 85-87) have considered Group

I for immediate examination and claims 69-84 have been withdrawn from examination and therefore

this restriction is made final.

Claim Objections

2.   Claim 1 depends on cancelled claim 62. Claim 1 appears to depend on claim 63. Examiner

assumes claim 1 depending on claim 63 for examining purposes. Appropriate correction is required.

Drawings

3.   The drawings are objected to because:

Specification on page 24 in lines 27-28 recites "Monochrome images 58, 59, and 60,

respectively depicted in figs. 9A, 9B and 9C" where figure 9B shows monochrome image 60 and

figure 9C shows monochrome image 62". Drawings 9B and 9C are not consistent with specification.

Appropriate correction is required.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office

action to avoid abandonment of the application. Any amended replacement drawing sheet should

include all of the figures appearing on the immediate prior version of the sheet, even if only one

figure is being amended. The figure or figure number of an amended drawing should not be labeled

as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from

the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 63-65 and 67-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Davis, U.S. Patent No. 5,420,937.

Claim 63 recites **"A computer implemented method for evaluating image quality, the method comprising: obtaining a raw scan image; selecting at least one image portion from the raw scan image"**. Davis discloses obtaining a raw scan image (col. 3, lines 30-36; col. 8, lines 50-60; col. 9 lines 50-65) and further discloses computer system to perform the method in figure 1. Davis further discloses "The scanned image 2 consists of a rectangular array 512 wide by 480 pixels high" (col. 9, lines 67-68) and further discloses "referring to FIG. 3, the fingerprint image array 2 is

divided by a slope **segment grid 188**, each segment of which has dimensions of 12 pixels in X and

Y directions" which conforms to selecting at least one image portion from the raw scan image and

further support can be found in (figure 3, **element 188 - shows at least one image portion from**

the raw scan image; col. 3, lines 55-68; col. 6, lines 40-50).

Davis further discloses the claim 63 limitation "generating a collection of slope-oriented data

that corresponds to said at least one image portion of the raw scan image" in (col. 16, lines 65-68

through col. 17, lines 1-15; col. 3, lines 55-68; col. 5, lines 65-68 through col. 6, lines 1-2; col. 6, lines

30-68; col. 8, lines 50-65; col. 11, lines 60-68; col. 19, lines 50-65, **where slope matrix is a**

collection of slope-oriented data).

Davis further discloses the claim 63 limitation "utilizing said collection of slope-oriented

data as a basis for determining a quality classification of said at least one image portion" in (col. 4,

lines 1-68, aberration check; col. 5, lines 65-68 through col. 6, lines 1-2; col. 6, lines 30-68; col. 10,

lines 26-35; col. 11, lines 29-55; col. 19, lines 50-65; col. 20, lines 3-10, used for **quality** control

testing of printed circuit board conductive traces). Also, Davis is directed to verification systems to

verify that a person is who he or she claims to be and these systems compare biometrics such as

fingerprints to the reference biometrics or biometrics (fingerprints) stored in the database (col. 8,

lines 50-65; col. 19, lines 53-65), where apparently (a) when the input fingerprint characteristics

matches the reference fingerprint (apparently input fingerprint being of good quality with no

aberrations), the person is verified and identified, and (b) when the input fingerprint characteristics

does not match the reference fingerprint (apparently input fingerprint being of bad quality with

aberrations), the person is not verified and not identified, thus providing the quality classification of

the input fingerprint pattern.

Claim 64 has been similarly analyzed and rejected as per the arguments and citations of

claim 63.

Regarding claim 65, Davis discloses "utilizing the slope representation to determine an

additional classification based on a brightness level within at least a portion of the raw scan of the

image" in (col. 10, lines 50-62, where black and white colors conforms to different brightness levels;

col. 10, lines 4-14; col. 11, lines 29-36).

Claim 67 recites "the method of claim 63, further comprising preprocessing the at least on

image portion to generate a monochrome image". Davis discloses "The program 34 converts the

gray scale image to a black and white image by thresholding" (col. 9, lines 55-62).

Claim 68 recites "the method of claim 67, wherein generating said collection of slope

oriented data comprises: dividing the monochrome image into a plurality of pixel grids". As

discussed in the rejection of claim 67, Davis discloses generating a monochrome image and further

discloses diving the monochrome image into a plurality of pixel grids (figure 3, col. 16, lines 66-68

through col. 17, lines 1-15; col. 3, lines 55-68; col. 6, lines 38-55).

Davis further discloses claim 68 limitations "performing a contour trace through said

plurality of pixel grids and recording a set of corresponding data in a raw slope data table; utilizing

said set of corresponding data to calculate a slope value for each pixel grid; and recording said slope

in the collection of slope oriented-data" in (Figures 3, 4, 8, 9 and 10; col. 17, lines 1-15, where

bordering is contour tracing; col. 3, lines 55-68; col. 4, lines 58-38 through col. 5, lines 1-12; col. 6

lines 30-68).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section
> 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the
> subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary
> skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

7.   Claims 66 and 1 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, U.S.

Patent No. 5,420,937 and further in view of Gagne et al., U.S. Patent No. 5,363,453.

Claim 66 recites "The method of claim 63, further comprising at least temporarily

terminating subsequent processing if the quality classification does not meet a predetermined

reference threshold". Davis as discussed in the rejection of claim 63, discloses the quality

classification by performing aberration tests (col. 4, lines 1-20). Davis clearly discloses "When an

aberration test fails, the next test in the sequence proceeds" which clearly provides the teachings

how a system can be programmed to perform quality check and thus a program can be

programmed, as well known, according to user's choice of operations to be performed. Davis **does**

not specifically teach the conditions as recited in claim 66 but examiner asserts that there are very

well known security identification systems that are available which rather than performing several

tests would temporarily terminate subsequent processing if the quality classification does not meet a

predetermined reference threshold and would indicate "invalid" and such systems including such a

feature would further provide more sensitivity towards invalid data scanned. However examiner

cites Gagne to further provide the support for above arguments. Gagne, same as Davis, is directed

to fingerprint analysis for identification purposes. Gagne clearly teaches "to determine whether or

not a fingerprint sample is approved, a "confidence level" has to be achieved. This confidence level

starts at zero......the actual confidence level that must be achieved in order for a fingerprint to be

"approved" is again determined by the specific application. One end-user might want a higher

confidence level than another end-user. After all element have been compared, and the confidence

level is determined, a flag is set to indicate whether of not the sample has "passed" the confirmation

process" (col. 15, lines 30) and further teaches that this confirmation can be done in ten steps or can

be done in 2 steps and therefore examiner here asserts that it clearly is a user's selection to select a

number of steps for confirmation and therefore it would have been obvious for one of ordinary skill

in the art at the time of invention was made in view of Davis and Gagne to temporarily terminating

subsequent processing if the quality classification does not meet a predetermined reference threshold

which would further provide more sensitivity towards invalid data scanned and as it would merely a

matter of user's selection to provide better sensitive system.

Claim 1 recites "the method of claim 63, further comprising: preprocessing at least a portion

of the at least one image portion of the raw scan image to obtain a monochrome image; and creating

a wire frame image based on the monochrome image". As discussed in the rejection of claims 63-65

and 67-68, Davis discloses obtaining a monochrome image using at least a portion of input image. Generating a wire frame image from a binary black and white image is nothing but obtaining a thinning or skeletonized image, which is very well known in the art of image processing and this is further disclosed by Davis in the background of the invention (col. 1, lines 54-68 through col. 2, lines 1-3).

8.   Claims 85-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, U.S. Patent No. 5,420,937 and further in view of Yamamoto, U.S. Patent No. 5,239,590.

Regarding claim 85, as discussed in the rejection of claims 63-65 and 67-68, Davis discloses "obtaining a raw scan of an image; preprocessing the raw scan to obtain a monochrome image; generating a collection of slope-oriented information based on the monochrome image; dividing the monochrome image into an array of pixel grids". Davis is directed to verification systems to verify that a person is who he or she claims to be and these systems compare biometrics such as fingerprints to the reference biometrics or biometrics (fingerprints) stored in the database (col. 8, lines 50-65; col. 19, lines 53-65), where apparently (a) when the input fingerprint characteristics matches the reference fingerprint (apparently input fingerprint being of good quality with no aberrations), the person is verified and identified, and (b) when the input fingerprint characteristics does not match the reference fingerprint (apparently input fingerprint being of bad quality with aberrations), the person is not verified and not identified, thus providing the quality classification of the input fingerprint pattern. Davis does teach the specifics such as "executing a count of pixels within at least one pixel grid of the array of pixel grids; comparing the count of the pixels in the at least one pixel grid to a reference; and determining a quantified classification as a relation of the count of the pixels to the reference", therefore examiner cites Yamamoto to provide

these teachings. Yamamoto, same as Davis, discloses "a verification processing system 20 which comprises an image processing portion 21 and a card reader 22. Master data (reference data) is read when the person being examined inserts an ID card 27 into the card reader 22. Then the comparison of the input data from the input image system 10 with the master data is performed by a computer 23. The comparison results are displayed at a display portion 24. When the comparison results come up to standard (coincidence of the fingerprints), an actuator 25 is operated and a door 26 is opened" (col. 3, lines 55-65). Yamamoto further discloses dividing the master (reference) image and input image into plurality of pixel blocks (col. 6, lines 30-50). Yamamoto further teaches comparing the number (count) of pixels in each block of the input image and master image (col. 2, lines 40-47) and further support can be found in col. 9, lines 45-55. Therefore, it would have been obvious for one of ordinary skill in the art at the time of invention was made to use Yamamoto's teaching in the invention of Davis of comparing input fingerprint with the reference fingerprint because both references are directed to same field of endeavor and Yamamoto's invention make it possible to realize accurate fingerprint verification using a small volume of data (See Yamamoto, col. 11, lines 15-17) and (a) when the input fingerprint characteristics matches the reference fingerprint (apparently input fingerprint being of good quality with no aberrations), the person is verified and identified, and (b) when the input fingerprint characteristics does not match the reference fingerprint (apparently input fingerprint being of bad quality with aberrations), the person is not verified and not identified, thus providing the quality classification of the input fingerprint pattern.

Claim 86 recites "the method of 85, wherein the reference comprises a threshold pixel count". As discussed in the rejection of claim 85, since input image block's pixel count is compared to the reference image block's pixel count to verify the identity and to classify input image quality,

the pixel count of reference image will apparently be seen as threshold pixel count by one of

ordinary skill in the art.

Regarding claim 87, as discussed in the rejection of claim 85, reference image is divided

into blocks. Since it can be divided into blocks or since a portion of reference image can be selected,

and as it being an image itself, it is well known that image processing can be processed (tuned) on an

image to further improve the quality and further enhance the features for reasons of analysis.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

- McMahon, U.S. Patent No. 3,968,475, discloses a digital processor for extracting data

  from a binary image.

- Swonger et al., U.S. Patent No. 4,015,240, discloses a pattern recognition apparatus

  for recognizing or identifying fingerprint images.

- Bourne., U.S. Patent No. 3,292,149, discloses identification and comparison

  apparatus for contour patterns such as fingerprints.

- Jordon et al., U.S. Patent No. 3,959,884, discloses method of classifying fingerprints.

- Schiller, U.S. Patent No. 4,685,145, discloses conversion of an image represented by

  a field of pixels in a gray scale to a field of pixels in binary scale.

- Taylor et al., U.S. Patent No. 4,896,363, discloses apparatus and method for matching image characteristics such as fingerprint minutiae.

- Tanaka et al., U.S. Patent No. 4,947,442, discloses method and apparatus for matching fingerprints.

- Kamiya et al., U.S. Patent No. 5,040,223, discloses fingerprint verification method employing plural correlation judgement levels and sequential judgement stages.

- Kim et al., U.S. Patent No. 5,105,467, discloses method of fingerprint verification.

- Igaki et al., U.S. Patent No. 5,109,428, discloses minutia data extraction in fingerprint identification.

- Capello et al., U.S. Patent No. 5,187,747, discloses method and apparatus for contextual data enhancement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manav Seth whose telephone number is (571) 272-7456. The examiner can normally be reached on Monday to Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
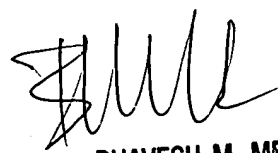
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system,

see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system,

contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Manav Seth
Art Unit 2625
September 21, 2005